

Miscellaneous Notes

1. LANGURS LIVING AT HIGH ALTITUDES

While carrying out a one year study of the social behaviour of a troop of langur monkeys (*Presbytis entellus*) living between 2440 and 3050 metres at Melemchigaon, in north-central Nepal, I observed a group of langurs at 4050 metres. Although this species has long been known to live at altitudes as high as 3660 metres in the Himalaya (Pocock 1939), this sighting is the highest published to date. The observations were made on August 18, 1972 at Routang, a high altitude pasture north of the village of Tarke Ghyang, Helambu valley, Nepal (28° 03'N, 85° 33'E). On the previous day, others observed this same group along the higher ridge at an altitude of 4250 metres.

Routang is a high pasture used during the summer monsoon by *dhzum*, a cow-yak hybrid commonly herded in the 2500-3700 metre altitude band in central Nepal. Two families occupied this pasture continually from mid June until mid August; the langur troop was there throughout this time. During these months, there is daily rain, continual cloud cover except for brief periods in the morning, and by August 18, cold weather forced the herds to descend to lower pastures. The tree line here is at approximately 3500 metres, and above this there are only dwarf rhododendrons, wild rhubarb and a few alpine shrubs. Local hunters report that there are no longer any leopard in this area and the only large mammal regularly found there is musk deer (*Moschus moschiferus*).

Observations

The group of langurs was observed moving up a steep gully from their sleeping place at

1200 hours. Observation was possible for only a five minute period when the clouds lifted and we found ourselves facing each other at a distance of 30 metres. During this time, I counted 30 animals, including several large adult males and at least two infants (approximately six months old) being carried by their mothers. This is a *minimal* count—all three observers estimated a group size of at least 50 individuals. The animals barked at us and appeared nervous, as they hurried up the gorge and over the top of the ridge. The steepness and slipperiness of the rocks made it impossible to follow them.

Local herdsmen said this group sleeps under an overhanging rock at 3780 metres, and they move up the slopes from this rock every morning to forage. The sleeping rock itself is inaccessible to humans, so we were not able to look inside ourselves but were able to get an accurate altitude measurement. This group had been at Routang for at least the previous two months, foraging at altitudes as high as 4270 metres, but avoiding the *dhzum* herds. It is locally believed that the langurs descend to a potato field at 2900 metres, near Routang to spend the winter.

Discussion

This is the highest published sighting of *Presbytis entellus*; the previous record height is *Presbytis entellus ajax* at 3960 metres in Kashmir (cited in Napier 1972). Furthermore, it places *Presbytis entellus* among the highest living nonhuman primates, along with the mountain gorilla (*Gorilla gorilla beringei*), the gelada baboon (*Theropithecus gelada*) and

the barbary macaque (*Macaca sylvana*) of the Atlas mountains.

Altitude is meaningful only in relation to latitude, rainfall and the morphology of the mountains. In this case, the recorded altitude places these monkeys well above the tree line in the alpine zone for at least part of the year. The common langur of India, Sri Lanka and Nepal is a member of the Colobidae—the group of arboreal, leaf eating monkeys who are primarily adapted to life in the trees. The common langur is the most terrestrial of this family and in some areas spends a significant proportion of its time on the ground, but always near the safety of trees. In fact, langurs may be the most adaptable Asian primate, surpassing that more famous opportunist, the rhesus macaque (*Macaca mulatta*). At Routang, langurs sleep on cliffs and live without trees for safety.

Though possible, it is doubtful that these langurs stay year round at Routang, especially when food and shelter are available at lower altitudes. In fact these extremely high populations may be the only ones who actually do make seasonal migrations to different elevations. Long term observations of a different troop living at lower altitudes (2500-3100 metres) showed no migratory pattern; the home range remained the same year round and within the range, there was no seasonal preference for higher or lower portions. This is in direct contradiction to local reports in both the Helambu and Trisuli valleys. Local beliefs have become incorporated into the literature on this species (Hingston 1920; Pocock 1939; Vogel 1971) and may stem from the migratory patterns of local residents who move up to higher pastures in the summer. There they find groups which always live at that altitude but assume instead that the monkeys migrated with them. Evidence from Melemchigaon further indicates that snow itself is not a deterrent to langurs. It was

observed that they will move along the ground in snow, even when it is possible to move through trees. The intensity of winter sun appears to compensate for the cold temperatures at night and langurs in the Himalaya are able to withstand night temperatures of -2°C with no observed ill effect. Food is no doubt the limiting factor here, and it is doubtful whether food sufficient to sustain a large langur troop is available as high as Routang in the winter.

The observations at Routang have implications for the consideration of mountain barriers to gene flow in the Himalaya. The langurs at Routang were observed to descend from that 4270 metre ridge in all four directions. These high and northern groups of langurs cannot be considered isolated from each other by mountain ridges and north-south flowing rivers. We observed langurs near Melemchigaon crossing rivers on bridges constructed for human traffic. And the group at Routang crossed with little apparent effort over the ridge at 4270 metres into the next valley to the east. The lower ranges of the Himalaya may not provide insurmountable barriers to east-west gene flow, especially for such an adaptable nonhuman primate as the langur monkey.

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Observations in Routang were made by Naomi H. Bishop, principal investigator, John M. Bishop and Mingma Tenzing Sherpa.

SYNOPSIS

A group of langurs (*Presbytis entellus*) was observed at 4270 metres in north-central

Nepal in August 1972. This is the highest recorded sighting for this species and suggests that the lower ranges of the Himalaya do not provide insurmountable barriers to the exchange of genes between Himalayan groups of this species.

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2. MIGRATORY BEHAVIOUR OF *MUS PLATYTHRIX* AT LUDHIANA (PUNJAB)

Little information is available on the migratory behaviour of Indian rodents. A study was undertaken from December, 1970 to November, 1972 at Ludhiana to know the movements of the Field Mouse, *Mus platythrix* (Bennett). Wonder traps were laid at 100 metres interval in a 53 ha cultivated area at the Ludhiana Farm of the Punjab Agricultural University. Mice were captured, marked and released at the point of capture. A mixture of husked rice, pearl millet and wheat was used as bait.

in range of movement of male and female mice in both the crop categories but the mean distance travelled by female *Mus platythrix* from crop to crop was significantly more ($P = 0.01$) than the mean distance covered by females within a crop.

With this limited data it is not possible to correlate the distance of movements of *Mus platythrix* with their preference of crop types or to explain the reason for greater ranges of movements from one crop to another.

It appears that the mean range of migration of the field mouse within the crop fields, irrespective of sexes was significantly ($P = 0.01$) less than that from one crop to another (Table). Although there was no significant difference

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